CLAIMS

1. A method for detecting and/or quantifying one or more analyte(s) in solution, characterised by

a) binding of two or more proximity probes to a respective binding site on said analyte(s), wherein the proximity probes are comprised of a binding moiety and a thereto coupled nucleic acid;

b) allowing the binding moiety to bind to the analyte(s) and allowing the nucleic acids to interact with each other if they are in close proximity to each other; and

c) detection and/or quantification of the degree of interaction between the nucleic acids

with the proviso that the binding moieties and the analyte(s) not all comprise nucleic acid.

2. A method according to claim 1, further comprising amplification of the interacted nucleic acids and detection/quantification of the amplification product.

3. A method according to ~~claims 1 or 2~~ Claim 1, wherein the binding moieties of the proximity probes are selected from a protein, such as a monoclonal or polyclonal antibody, lectin, soluble cell surface receptor, combinatorially derived protein from phage display or ribosome display, peptide, carbohydrate, nucleic acid, such as an aptamer, or combinations thereof.

4. A method according to ~~claims 1, 2 or 3~~ Claim 1, wherein the analyte(s) is/are protein(s), protein aggregate(s), prion(s) and/or nucleic acid(s).

5. A method according to ~~claims 1, 2, 3 or 4~~ Claim 1, wherein the binding sites for the binding moieties of the proximity probes are on one and the same analyte, or on two close analytes.

6. A method according to ~~any of the above claims~~ Claim 1, wherein the binding moieties are antibodies and said antibodies each bind to the analyte(s) via a further antibody having binding specificity for the analyte(s), and wherein the binding moieties are directed against the Fc portion of the further antibody.

7. A method according to ~~any of the above claims~~ Claim 1, wherein the interaction of said nucleic acids coupled to the binding moieties is through hybridisation to a common splint template and ligation of the nucleic acid ends.

8. A kit for detecting and quantifying one or more analyte(s) in solution, comprising
- a pair of proximity probes comprising binding moieties with affinity for the analyte(s) and each provided with a nucleic acid (reactive functionality) capable of interacting with each other; and optionally
- a ligase and a splint template for joining the nucleic acids,
- primers which hybridise to each of the nucleic acids.

9. A kit according to claim 8, comprising
- a first pair of binding moieties being a first pair of antibodies with affinity for the analyte; and
- a second pair of binding moieties being a second pair of antibodies directed against the Fc portion of the first pair of antibodies.

10. A kit according to claim 8, comprising three proximity probes one with a 3' free nucleic acid (A), one with a 5' free nucleic acid (B), and one with both 3' and 5' free nucleic acids (C), wherein the 3' end of A interacts with the 5' end of C and the 3' end of C interacts with the 5' end of B.

11. A kit according to claim 8, wherein the binding moieties are aptamers and further comprising a bivalent affinity reagent for dimerising two analytes each with only one aptamer binding site.

12. A kit according to claim 8, comprising several pairs of proximity probes each with a specific binding moiety and unique nucleic acids for identification.

13. Use of the method according to any one of claims 1-7 and/or the kit according to any one of the claims 8-12 for screening for ligand-receptor interaction antagonists a high throughput screening procedure.

14. Use of the method according to any one of claims 1-7 and/or the kit according to any one of the claims 8-12 for competitive detection and/or quantification of an unknown analyte in solution.

15. Use of the method according to any one of claims 1-7 and/or the kit according to any one of the claims 8-12 for screening ligand candidates in a large pool.

16. Use of the method according to any one of claims 1-7 and/or the kit according to any one of the claims 8-12 for screening of drug candidates from large libraries.

17. Use of the method according to any one of claims 1-7 and/or the kit according to any one of the claims 8-12 for detection of infectious agents.

18. Use according to claim 17, wherein the infectious agent is detected in food for humans and animals.

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